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PATENT

Application No. 10/015,813

Filed: November 2, 2001

GENERATOR FOR AN OUTBOARD MOTOR

1. **(Currently Amended)** An outboard motor having an electrical generator and integral cooling arrangement therefor, the motor including:

an internal combustion engine having an engine block, a crankshaft, and a bearing that journals a portion of the crankshaft for rotation within the engine block,

an electrical generator comprising :

(i) a stator armature comprising a series of stacked plates formed of a material having high magnetic permeability,

(ii) a heat conductive plate having substantially the same planar dimensions as the stacked plates, the heat conductive plate formed of a material having a higher heat conductivity than that of the stacked plates, the heat conductive plate abutted against one of the stacked plates;

(iii) an armature coil wound around the assembly of the stacked plates of magnetic permeability and the heat conductor plate so that the heat conductive plate is an integral part of the stator armature; and

(iv) a rotor coupled to the crankshaft so as to rotate therewith, the rotor having magnets that are arranged next to the stator armature; and a stator bracket formed of a material having high heat conductivity, the bracket directly attached to the engine block and the conductive plate integral with the stator armature so that the resistance heating within the stator armature is transferred through the conductive plate and the stator bracket to the engine block.

2. **(Currently Amended)** An electrical generator for a watercraft, the generator having an integral cooling arrangement comprising

a stator armature comprising:

(i) a series of stacked plates formed of a material having high magnetic permeability;

(ii) a heat conductive plate having substantially the same planar dimensions as the stacked plates, the heat conductive plate formed of a material

having a higher heat conductivity than the stacked plates, the heat conductive plate abutted against one of the stacked plates having high magnetic permeability; and

(iii) an armature coil wound around the assembly of the stacked plates of magnetic permeability and the heat conductive plate so that heat conductive plate is an integral part of the stator armature; and

(iv) a rotor rotating relative to the stator armature, the rotor having a plurality of permanent magnets arranged next to the stator armature.

3. **(Currently Amended)** An electrical generator having an integral cooling arrangement comprising:

a stator armature comprising a series of stacked plates formed of a material having magnetic permeability;

a heat conductive plate having substantially the same planar dimensions as the stacked plates, the heat conductive plate formed of a material having a higher heat conductivity than the stacked plates;

the heat conductive plate abutted against one of the stacked plates having magnetic permeability; and

an armature coil wound around the assembly of the stacked plates of magnetic permeability so that the heat conductive plate is an integral part of the stator armature.

4. **(Currently Amended)** The electrical generator of Claim 3 wherein the heat conductive plate is formed of aluminum.

5. **(Currently Amended)** The electrical generator of Claim 3 wherein the heat conductive plate is formed of a material with a thermal conductivity equal to that of aluminum.

6. **(Currently Amended)** The electrical generator of Claim 3 wherein the heat conductive plate is formed of a material with a thermal conductivity equal or greater than that of aluminum.

7. **(Currently Amended)** The electrical generator of Claim 3, wherein the stator bracket is formed of aluminum.

8. **(Currently Amended)** The electrical generator of Claim 3, wherein the stacked plates having magnetic permeability are formed of iron.

9. **(Currently Amended)** An electric generator driven by a marine engine having a crankshaft;

the electrical generator being located at one end of the crankshaft and comprising:

a series of uniformly spaced radially extended armature legs made of metal having magnetic permeability attached to a similar shaped aluminum plate; and

a rotor attached to the crankshaft, the rotor containing a plurality of magnets to induce an electrical current in the armature legs.

10. **(Original)** The electric generator configuration of Claim 9, wherein the armature legs and aluminum plate are mounted to an aluminum stator bracket.

11. **(Currently Amended)** The electric generator configuration of Claim 9, wherein the heat induced is designed to be directly dissipated through the aluminum plate to the stator bracket.

12. **(Currently Amended)** The electric generator configuration of Claim 10, wherein the stator bracket is mounted to the cylinder block of the marine engine.

13. **(New)** The electric generator configuration of Claim 9, wherein the rotor is a flywheel rotor.

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